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JUNE 1961

agricultural marketing



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Cover page

Brides, campus graduates, and roses will win their usual share of attention this month. But the gigantic American dairy industry also will take a prideful bow when it again celebrates June Dairy Month—this time it's the Silver Anniversary of serving the American consumer with ever-increasing honors. In featuring milk and some of its many products, often referred to as Nature's most nearly perfect food, the June cover shows but one arm of the dairy industry's production genius—cheese in its many forms and flavors. Whether tangy or very sharp, sweet or sour, or bland for the most timid tastebuds, there's a type of cheese here for every palate to savor, whether it's for indoor eating or out-of-door festivities in June, often the merriest of all the months.

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AGRICULTURAL MARKETING is published monthly by the Agricultural Marketing Service, United States Department of Agriculture, Washington 25, D. C. The printing of this publication has been approved by the Bureau of the Budget, March 18, 1959. Yearly subscription rate is \$1.50, domestic; \$2.25, foreign. Single copies are 15 cents each. Subscription orders should be sent to the Superintendent of Documents, Government Printing Office, Washington 25, D. C.



cheese buying guide

for consumers

by ED SMALL



THAT CENTURIES-OLD art of cheese-making has progressed to a point where, today, there is literally a cheese to suit every taste, mood, or occasion.

The wide range of distinctive flavors, textures, and colors that exists among cheese varieties makes it one of the most versatile of foods, and yet it is also one of the most nutritious.

Today's consumer may choose from such a large variety of natural cheeses, process cheeses, and related products—each with its own characteristics—that it is to his advantage to be familiar with their major differences.

Age or degree of ripening, which influences flavor, is noted on the labels of certain cheese varieties. Along with body and texture, it is an important means of classifying them.

For instance, Cheddar cheese, a firm ripened variety, with a curing period of from 1 to 12 months or more, may range from mild to very sharp in flavor.

Colby, also a firm ripened variety, is softer and more open than Cheddar, and with a curing period of from one to three months, has a flavor ranging from mild to mellow.

Swiss, with its sweet, nut-like flavor, is easily recognized by its characteristic large round eyes or holes. Two other firm ripened varieties are Gouda, with a mellow nut-like flavor, and Provolone, with a smoky, salty flavor ranging from mellow to sharp.

Parmesan and Romano, both of Italian origin, are examples of very hard ripened varieties. While Romano may have a ripening period of from 5 to 12 months, Parmesan may be cured for 14 months to 2 years or more. Both have a sharp piquant flavor.

Cottage cheese, a soft unripened variety, has a mild flavor. Two other soft unripened cheeses, Cream and Neufchatel, have a mild acid flavor, while another, Ricotta, has a mild sweet nut-like flavor.

The firm unripened varieties, Gjetost and Mysost, have a firm buttery consistency and a caramel flavor.

Of the soft ripened varieties, Brie and Camembert, with a curing period of from four to eight weeks, are two which range from mild to pungent in flavor. Another, Limburger, has a highly pungent and very strong flavor.

Blue-vein mold ripened varieties such as Blue (or Bleu), Roquefort, and Gorgonzola, use a culture of mold in the ripening process, giving each its peppery flavor.

Natural cheeses are often blended or modified with certain ingredients to prepare process cheeses and related products.

Pasteurized process cheese is a blend of fresh and aged natural cheeses which have been shredded, mixed, and heated, with no further ripening occurring after heating. The blend often contains vegetable or meat products which modify its flavor.

Pasteurized process cheese food is prepared similarly, but contains less cheese, with nonfat dry milk or whey solids and water added. It is milder in flavor, spreads more easily, and

(continued on page 15)

The author is a member of the staff, Dairy Division, Agricultural Marketing Service.



The PACKERS and STOCKYARDS ACT

- *what it is*
- *what it does*

by LEE D. SINCLAIR

IN SAN FRANCISCO, a meat supply house is told to stop discriminating in price between purchasers of meat.

In Kansas City, 38 livestock dealers are ordered to abandon a "turn system" in their trading on stocker and feeder cattle.

In Fort Worth, a meat packer is ordered to pay for livestock purchased "within the period time es-

tablished by custom at the market."

These are a few representative actions taken by the Packers and Stockyards Division, U. S. Department of Agriculture, during the past several years in the enforcement of the Packers and Stockyards Act.

One of our oldest and broadest regulatory laws, the P&S Act was passed by Congress 40 years ago, in August 1921. It was designed to preserve free and open competition for livestock and meat so that each

will bring its full and true value in the market place.

To this end, the Act makes it unlawful for those subject to the law to engage in practices which restrict competition, control prices, control the flow of livestock, result in monopolies, or which are unfair, deceptive, or unjustly discriminatory.

The law was aimed primarily at eliminating any practices by meat packers that would have an adverse effect on competitive marketing of livestock and meat. It was designed to protect livestock producers who must rely on meat packers for their markets, to protect consumers who must depend on meat packers for their principal food product, and to protect meat packers from unfair business practices of competitors.

To serve these far-reaching purposes, the sections of the law dealing with the business practices of meat packers are written in the broadest of terms—broader than those of the Sherman Antitrust Act, the Clayton Act, the Federal Trade Commission Act, and the Interstate Commerce Commission Act.



The Act has been in effect since 1921 which means that meat packers, the major terminal markets, and some of the larger auction markets have been operating under this law for years.

Broad provisions of the Act as applied to the meat packing industry are aimed at helping to keep our economy continuously strong and healthy.

The P and S Act regulates business practices. Here, a USDA specialist checks packers' advertising and merchandising aids offered to retailers.



At the time the P&S Act was written, meat packers owned or controlled the major livestock markets. So the regulation of stockyards was written into the law as incidental to the regulation of the business practices of packers. The picture has now changed, of course, and the regulation of stockyards has assumed more importance. Nevertheless, the purpose remains the same—preserving free and open competition in buying and selling livestock and in the meat packing industry.

But just as the forest is sometimes obscured by the trees, so the true nature and purpose of the P&S Act is sometimes obscured by the multitudinous aspects of its enforcement—particularly where it concerns stockyards. The public so often sees charges of false weighing, failure to keep accurate accounts, misuse of shippers' funds, and similar charges brought against dealers, market operators or agents, or packers, that it may be led to believe that these actions are representative of the purpose of the law.

The P&S Act is accurately de-

scribed as one that regulates business practices. Enforcing it, then, is not so much a police action as one of drawing the line between fair and unfair business practices.

Take the case of the San Francisco meat supply house. Here the violation was a matter of stepping over the line between competitive pricing—one of the basic tenets of our free economy—and discriminatory pricing—a violation of the P&S Act. The firm was ordered to “cease and desist from discriminating in price between purchasers of meat . . . where the effect of such discrimination may be to substantially lessen competition or tend to injure, destroy, or prevent competition with any competitor . . .”

In the USDA hearing on the case, it had been found that the company “in order to take business from competitors, sold beef and beef products at lower prices to some accounts than it charged others. In some cases these prices were lower than the cost of the meat to the supply house. Competitors lost accounts in these instances because, for them, it would have meant selling meat at a loss.”

However, the USDA order went on to encourage competitive pricing by pointing out that it was permissible to sell meat at lower prices to one customer when necessary to meet an equally low price of a competitor, to meet changing conditions of the market or the marketability of the meat, or to allow for different costs in processing, selling, or delivering the meat.

The USDA action against the company was taken in the interest of preserving competition in the selling of meat in that locality. Whether or not the company intended to drive competitors out of business, the fact that the pricing practices in question might have had that effect, and thus have lessened competition, made it necessary to call a halt to those practices. USDA's ruling in this case has been upheld in a court test.

The 38 Kansas City dealers who

used a “turn system” to buy stocker and feeder cattle were following a custom that had grown up through the years. They would draw numbers, or flip a coin, or by game of chance determine the order in which they would look at, bid on, and buy cattle in the sales alleys at the Kansas City Stock Yards.

But the effect of this practice was to restrict competition for the stocker and feeder cattle which had been sent to the yards for sale to the highest bidder.

The practice not only precluded competition between dealers, USDA found, but also prevented other market patrons, such as farmers and feeders, from having a chance to look at or bid on cattle until the dealers were through.

USDA's judicial officer, in ruling on this case, called the “turn system” the “antithesis of free, open competitive bidding.” Several court decisions have upheld the USDA ruling against this practice.

In the case of the Fort Worth meat packer, USDA again drew the line between fair and unfair business practices. It ordered the company to pay for livestock purchased within the period of time established by custom at the markets.

The packing company's failure to pay within the customary time, USDA ruled, was unfair since it placed the markets in the position of financing the company's purchases, which was not a part of the agreement between the two parties to the transaction.

Through such actions, the Packers and Stockyards Division of USDA's Agricultural Marketing Service works to apply the broad provisions of the P&S Act to the business practices of the livestock marketing and meat packing industries—not to straight-jacket these industries but to keep them free, and in so doing, to help keep our economy strong and healthy.

The author is Deputy Director, Packers and Stockyards Division, Agricultural Marketing Service.



FOOD PROCESSING PLANTS

for Rural Areas

by PAUL R. KULP

MORE AND MORE small agricultural communities are looking to processing plants as one way to increase the community pay check.

Economists in the U. S. Department of Agriculture can help them look in the right direction, although they cannot pinpoint the particular profit-making operation.

The first thing, they suggest, is to carefully examine the local farm product and see what its possibilities are as a processed item.

You need a volume product—one of good quality and of steady supply.

You need a market, too. This means not just enough people, but enough people with enough dollar potential to make purchases.

If your area has a growing population—so much the better. And better still if incomes are on the way up. A growing marketing area and higher incomes are a good sign of a good sales potential.

Now, what about the competition? Your area may be already overloaded with processing plants of the type you are planning. Or, the trend may not be toward more, but toward

fewer plants. Let the current processing picture serve as your guide and don't press your luck.

Another thing—don't figure on expansion projects offering an abundance of new employment. A mechanized plant can often turn out a lot more product with just a few more employees. The result may be only a slight increase in employment opportunities for the community.

And while considering your area as a possible site for a processing plant, think, too, in terms of transportation costs. Your product—whatever it might be—must get to market at a competitive price.

In general, if the product is bulky or gains weight with processing, the plant should be located near the market. And, conversely, if a product loses weight with processing, the plant should be near the production area.

This is the economist's rule of thumb. But it is not hard and fast. Freight rates today sometimes offer advantages of distance. So it's entirely possible that a distant processing plant might have lower transportation costs than a nearer competitor.

Here are a few of the questions that need answers before a commun-

ity can hope to develop a profitable processing operation:

- Do you have community support?
- How much will the plant cost?
- Do you have the money or know where you can get it?
- How much will it cost to get your product to market?
- Can your private label compete with the labels of national or regional concerns?
- Is your supply sufficient to keep your plant operating?
- Can you put out a high quality product?

If you want a national firm to take on the operation, you have additional questions.

- Is a good site available?
- What are the wage rates, taxes, and utility costs?
- Do you have a labor supply?

But before any community improvement program can get going, you need a large dose of civic support. And along with this support you need solid business judgment, experience, and planning.

Some Federal agencies also can help with programs to develop new processing facilities. For this information, write *Editor, Agricultural Marketing*.

The author is an agricultural economist in the Economics Research Service, USDA.

COSTS IN MARKETING DAIRY PRODUCTS

by D. D. MACPHERSON
and HELEN V. SMITH

AMERICANS are showing a growing fondness for cheese, AMS researchers report. The cheese market, in an 18-month period ending last December, was strong enough to push cheese out of the surplus food category.

At the end of 1960, American processed cheese sold at retail for 6 cents more than it had averaged for the previous 6 years. Farm values had risen over 8 percent.

The farmer's share of a dollar's worth of American processed cheese in the retail store was 49 cents—a cent more than it had been during the previous year.

Ice cream has been another of the dairy industry's star sales performers over the past decade. And researchers predict this trend will continue in the years ahead. Price figures explain why. Retail prices, farm values, and marketing margins for ice cream have been stable during the previous 10 years while the prices of other foods have risen an average of 13 percent.

Better merchandising methods and higher consumer incomes also contributed to greater sales of frozen dairy products. Busy homemakers have made ice cream one of the most popular convenience foods.

The authors are staff members of the Marketing Economics Research Division of the Economics Research Service.

Ice cream sales, however, indicate a shift in buying patterns. Ten years ago, only 8 percent of all ice cream was sold in prepacked half-gallon containers. Today, nearly half of all sales are in this form.

Just the opposite trend has taken place for hand-packed ice cream in pint and quart containers and ice cream served in cones and dishes. Ten years ago, nearly half of all ice cream went over the counter via the ice cream dipper; in 1960, only 18 percent.

Prepacked pint sales also dropped from 25 percent to 15 percent of all sales.

Fluid milk sales have changed quite a bit, too. In 1960, the farm value of a quart of milk was 11 cents. This isn't as high as it was 10 years ago, but it's better than in 1955, the period's low. Climbing

farm prices since 1955 partly compensated for the earlier low and held the 10-year average to a 3-percent decline in farm value of fluid milk.

While the farmer was getting a return of 11 cents a quart for milk in 1960, the consumer was paying about 25 cents. Each year the retail price of fluid milk has edged upward a little, for a 10 year increase of 14 percent.

Despite the higher retail price of milk in recent years, consumers' milk budgets have changed relatively little, mainly because of shifting buying patterns. Consumers save by buying more milk in half-gallon containers than in quarts and by using regular homogenized milk more frequently than premium-priced milk.

Thrifty homemakers obtain further savings by going to the store for milk instead of having it delivered. And many consumers take advantage of quantity discounts offered on home delivered milk.

Detailed research findings on marketing margins for dairy products, including evaporated milk and butter, are available in the January 1961 issue of *The Marketing and Transportation Situation*. Copies may be obtained from the Marketing Information Division, Agricultural Marketing Service, U.S. Department of Agriculture, Washington 25, D.C.

Retail prices for ice cream have been stable for the past 10 years. Prices of other foods have risen an average of 13 percent.

Thrifty homemakers save by going to the store for milk. They get added savings by buying more milk in half-gallon containers.



NEW MARKETS for American Poultry

by ELEANOR FERRIS

JUST FIVE YEARS AGO, two uniquely American foods—turkey and the broiler-fryer—were little known outside this hemisphere.

Today these high-quality American poultry meat products are enjoyed by people around the globe—and the amounts exported are giving a significant boost to our poultry industry.

In those five years, exports of U. S. poultry meat (including stewing hens and canned chicken) leaped from 28 million pounds to more than 175 million pounds a year. Last year, our exports of all poultry products were valued at about \$80 million—a signal contribution in helping the United States maintain a favorable balance of merchandise trade.

Western Europe biggest market

Most of our poultry meat exports are going to western Europe where consumers are taking to the American ready-to-cook poultry products the way kids take to ice cream.

But this consumer acceptance didn't just happen. It is largely the result of the intensive promotional activities of the Institute of American Poultry Industries (representing the industry-wide International Trade Development Committee) and the efforts of USDA's Foreign Agricultural Service.

Market development work carried on in Western Europe by these two agencies is a prime example of how industry and government can work together to open new markets for

American farm products. The methods they have employed include:

1. *Introductory sales for foreign currencies under provisions of Public law 480.* In late 1955, for instance, the United States and West Germany signed a sales agreement under P.L. 480 for shipments of poultry valued at \$1.2 million. This introductory program proved so successful that it was followed by West German dollar allocations for the purchase of U. S. poultry.

West Germany is now our biggest overseas customer, taking a total of 86 million pounds of our ready-to-cook poultry products last year.

2. *International trade fairs.* FAS and IAPI have cooperated in displaying American poultry products at fairs in Germany, Switzerland, England, the Netherlands, Spain, and Italy (as well as at fairs in other parts of the world). Millions of European consumers and trade people got their first taste of American fried chicken at these fairs—and learned to like it.

3. *On-the-spot promotional and technical work.* IAPI maintains three offices in Europe and its representatives work continually with poultry importers, wholesalers, and retailers to help increase sales and consumption of U. S. poultry through advertising, news releases, special exhibits and cooking demonstrations, and point-of-sales materials such as recipes. FAS marketing specialists work with trade people also, and help them to solve storage, handling, and merchandising problems. U. S. agricultural attaches work with government officials to help eliminate trade barriers.

A special set of conditions helped to make the market-promotion program in Western Europe a success.

First, the opportunity was there to compete for the market. European poultry is still mostly a by-product of the egg-producing industry and sold in uneviscerated form.

Second, the European economy is prosperous and many people there have a higher purchasing power now than ever before in their history. They have the ability—and the desire—to purchase new and modern food items.

Third, many European countries now have the facilities to handle frozen and other perishable food items. Switzerland has some of the most modern supermarkets in the world—one large chain, a leading importer of U. S. ready-to-cook poultry, has contracted to have its purchases packed under its own label by an American poultry processor.

Grading aids program

USDA's poultry inspection and grading programs, operated by the Agricultural Marketing Service, also play a role in aiding our export programs. Our Federal poultry inspection law requires that all poultry meat moving into foreign commerce must have been inspected by the USDA in accordance with its standards for wholesomeness. It is also possible for the foreign buyer to get the quality of product he wants by ordering on the basis of the USDA quality grades.

Export certificates issued by the inspection service attest to the fact that the buyer's requirements have been met and that the product is wholesome, free from disease and adulteration, and accurately labeled.

All of the joint industry-government promotional activity, however, is not for the purpose of making direct sales of poultry but merely to pave the way for U. S. private enterprise to do business the American way: Find its own customers and make private sales to them.

The author is an information specialist in the Marketing Information Division, AMS.

Leading exporter of poultry

This the industry has proceeded to do with highly successful results. By 1959, the United States had become the world's leading exporter of poultry meat.

Our 1960 exports of 177 million pounds represented approximately 3 percent of our national production of poultry meat. This is not a large percentage, but had this amount been thrown on the domestic market instead of being sold overseas, it could have created serious price problems here.

For even though the U. S. poultry industry is now supplying us with nearly one-fifth of our annual meat supply—an annual per capita consumption of more than 36 pounds—such is this industry's rate of growth that even our phenomenal consumption has not kept pace with production.

In this mass-production, highly-mechanized industry, where profit margins are extremely narrow and based on large volume, even a small amount of surplus can be disastrous.

So the IAPI and USDA are continuing their vigorous foreign market development program, not only in Western Europe but in other countries as well. Last year U. S. poultry was shipped to about 60 countries including such distant places as Saudi Arabia, Japan, and Hong Kong—which alone took 9 million pounds!

These exports have meant not only valuable dollar sales, a reduction in the supply pressure on domestic prices, and an increase in the income of U. S. poultry producers—they have been a factor in good international relations as well. Our U. S. poultry is a good nutritious food product that millions of people throughout the world need and want. Meeting the food needs of friendly peoples abroad and promoting world trade can certainly be considered a step in the direction of world peace.

Barbecued chicken is a favorite with the Swiss. Leading stores offer this delicacy to customers. Here, a lovely Swiss attendant prepares U. S. broilers on spit.



"Ummmm!!! good!" was the reaction of these German girls and thousands of others as they had their first opportunity to sample U. S. fried chicken at trade fair in Cologne.



Left, William Post family of Rotterdam, Holland, enjoy their first taste of U.S. roasted turkey in their home. Below, at the 11th Samples Fair in Cagliari, Italy, H. W. Ziroli, IAPI Director for Italy, describes the quality of the products and explains to a young housewife how they are thawed and prepared for cooking.



Controlling the Cigarette Beetle

by JOSEPH N. TENHET

PREVENTION is the first step toward any cure. And AMS researchers say they cannot over-emphasize the prevention of insect infestation in tobacco storage and processing plants.

This is particularly true in the tropics where the weather is warm and the living is easy for cigarette beetles. It also is true in the continental United States.

Tobacco men here and abroad may well profit from the recommendations made by AMS entomologists who have studied the control of cigarette beetles in the tropics.

Recommendations designed for an area like Puerto Rico must be able to meet the toughest possible conditions. Beetles in the West Indies (in contrast to their brethren in other parts of the world) eat tobacco

First step in protecting tobacco from beetles is to know where they are. The suction-light trap, is one of the best ways of doing this. This trap is widely used in the U.S.



before and after curing, even finished cigars.

The cigarette beetle multiplies rapidly anywhere, but especially in the tropics. Tobacco men in Puerto Rico must contend with about six generations of beetles a year, twice as many as in the continental U.S.

Furthermore, the beetles thrive on the year-round summery climate. There is no prolonged cold spell to put a seasonal end to these insects and their ravenous appetites.

One of the most important preventive measures is strict sanitation. This means weekly or even daily cleaning of storage and processing plants.

Good sanitation cannot be stressed strongly enough. Beetles breed in the least bit of tobacco trash or dust—in scraps on the floor, in sweepings, in tiny pieces of cloth, and in many other odds and ends around the warehouse.

To control infestation, all tobacco dust should be sucked out of cracks and crevices, bins, benches, and cabinets with an industrial vacuum cleaner. Walls, ceilings, and floors of buildings should be liberally sprayed with 5 percent DDT during slack periods. And, machinery should be thoroughly cleaned before it is stored, and fumigated when possible.

As much as we'd like to think otherwise, insects—at some time or other—may come in contact with all lots of tobacco. To avoid the possibility of bundling up live beetles in finished cigars all tobacco brought into the cigar factory should be placed in insect-tight receiving rooms or buildings, instead of going directly into the manufacturing area.

Another common source of insect trouble is in the bins used for storing serap filler. Some of these bins are rarely, if ever, completely

emptied. As soon as most of the contents are used, the bins are refilled. A small amount of tobacco in the bottom is never used and becomes a favorite breeding place for cigarette beetles. Enough storage bins to allow complete emptying and cleaning between lots would go a long way toward reducing the number of cigarette beetles in the factory.

Although it may be impossible to completely stop the beetles in a warehouse or processing plant, their presence does not need to go undetected. Several kinds of insect traps can be used to detect the presence of cigarette beetles. Researchers say the suction light traps do the most effective job.

As to how to kill the beetles once they get into the tobacco, that's another matter—and one that varies with the area. In the north (continental U.S.), there are usually 3 broods with distinct peaks in population. Fumigation at a peak kills large numbers of beetles.

Not so in the tropics. There are too many overlapping broods present at the same time—in all stages of maturity, from egg to adult. So, to be effective, fumigation must be done often.

The tobacco may be fumigated in vacuum chambers, atmospheric chambers, in entire warehouses, or under tarps. Vacuum chambers are best—rapid, completely effective, but very expensive. Fumigation in an atmospheric chamber is slow, but quite effective and much cheaper. Warehouse or space fumigation offers advantages of speed and low cost, but it is the least effective of the three. And fumigation under tarps works only for small lots of tobacco.

The author is entomologist-in-charge of the AMS Stored-Tobacco Insects Laboratory in Richmond, Virginia.



SCHOOL LUNCH PROGRAM

Continues Growth

Lunch is now being served . . .

FIFTEEN YEARS AGO, when the National School Lunch Act was passed, even the most audacious planners could hardly have anticipated the tremendous growth of the program. Even now, 19.9 billion meals later, few realize what an important market for food the school lunch program has become, or what a vital role it plays both in the Nation's farm economy and in the Nation's health.

According to the latest count, it's estimated that 13.5 million youngsters in some 63,000 schools are taking part in this year's program, a figure roughly equal to one-third of the Nation's school population. And by June of this year, the Agricultural Marketing Service estimates these children will sip, spoon and otherwise consume 2.26 billion lunches.

Virtually all of these lunches will be complete meals — "Type A" lunches that contain one-half pint of fluid whole milk plus specified minimum amounts of protein-rich foods, fruits and vegetables, enriched bread or rolls, and butter or fortified margarine.

Obviously, it takes a staggering amount of food to supply a menu like this to the millions of hungry youngsters served by the School Lunch Program. In all, something like 34.2 billion pounds of food have been used since the program began. Just one food group, fruits and vege-

tables, accounted for 10.4 billion pounds or about 347,000 carloads—enough to make a freight train 2,826 miles long, reaching from New York to San Francisco.

Most of the food—approximately 80 percent—is purchased locally by the individual schools. In this way, the School Lunch Program has expanded markets for food in thousands of communities all over the country, and, in some States, has become the State's biggest food service customer. Last year, for example, local purchases amounted to nearly \$540 million. The estimate for 1961 is \$575 million.

The States and local sources pay the major share of the school lunch bill. Federal funds are allocated to the States to help reimburse schools for part of the cost of foods purchased, but these funds must be matched from sources within the States at the rate of at least \$3 for each Federal dollar. In operation, this matching requirement has been exceeded every year since the program began. Last year, the overall ratio of State to Federal funds was \$8 to \$1; this year it promises to be \$9 to \$1.

In addition, Federal support for the program last year included \$70 million in surplus commodities and approximately \$61 million worth of foods purchased and distributed by AMS to help schools meet established meal-type standards.



Ever since the National School Lunch Program began in June, 1946, its objectives have been "to safeguard the health and well-being of the Nation's children, and to encourage the domestic consumption of nutritious agricultural commodities and other food."

Now, fifteen years later, it's reassuring to know that the Federal, State, and local officials responsible for cooperatively administering the program have done much toward achieving those aims.

Operating Grain Aeration Systems in Hard Winter Wheat Area

by G. L. KLINE and H. H. CONVERSE

OPERATORS and managers of wheat storage facilities can now figure how to get the most profitable mileage out of their aeration systems. A handy guidebook, developed by AMS researchers, gives them the information they need.

Designed primarily for use in the hard winter wheat area, the research report covers both upright and flat storage units. It discusses fan operating schedules for portable and fixed systems.

The report emphasizes the fact that aeration systems should cool the grain rapidly yet keep the moisture in the grain from either rising or falling too much. By maintaining a uniform temperature throughout the bin, the aeration system prevents moisture accumulation on the surface grain—which can otherwise be a stumbling block to safe storage.

When the grain temperature is below 70° F. and the moisture content 13 percent or below, mold and insect growth is retarded. At 50° F. or below, insect reproduction ceases.

The authors are agricultural engineers in the Transportation and Facilities Research Division of AMS. They are stationed at Manhattan, Kans.

Aeration can successfully maintain these levels of temperature and humidity—except at certain times in the summer. In winter months, it is possible to hold the temperature between 35° and 50° F. This provides satisfactory control of mold, insects, and humidity.

To give the fans enough time to cool the grain, AMS researchers allow a broader air humidity leeway than some commercial elevators. Under AMS standards, fans are set to operate whenever the relative humidity of the air is 90 percent or lower in the summer and fall. An 80 percent setting is recommended for the winter months.

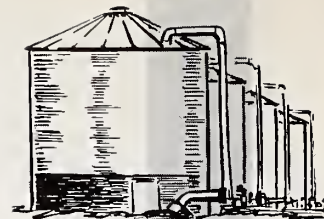
Automatic controls are considered essential for most aeration systems. Wear and tear as well as operating costs are lower if the fans automatically turn off when cooling is impractical or when operation would raise the humidity of the grain.

Automatic controls also make it possible to take advantage of every bit of good operating weather. And, they tend the fans at all hours of the day and night.

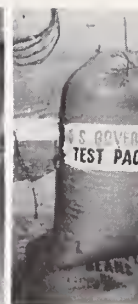
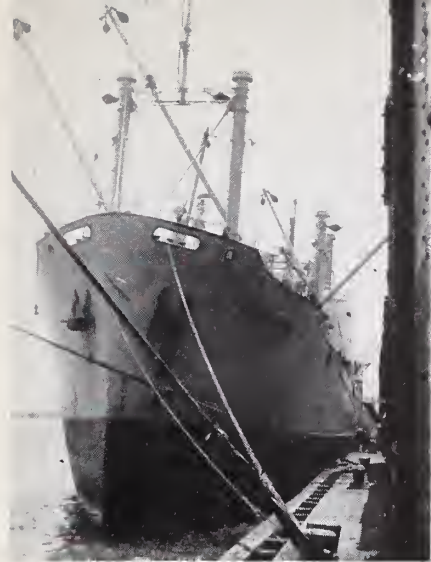
Researchers say power costs for operating the fans are lower for flat storage units than for upright ones. Costs, however, vary with the seasons of the year. In the summertime, power costs about 0.07 cent per bushel of wheat in an upright storage or about half the cost of power in the winter when it takes longer to cool the grain. These figures apply to a fan setting which moves air through wheat at a rate of $\frac{1}{30}$ cubic foot per minute per bushel.

The AMS guidebook also gives recommendations for aerating wheat carried over from the previous year. These schedules are flexible so that aeration equipment can be used for handling wet wheat for short periods and for fumigation. Recommendations also can be adapted for the aeration of grains other than wheat.

Still in the process of publication, the research report on which this article is based will be available later this year. Copies may be obtained from the Office of Information, U.S. Department of Agriculture. Ask for "Operation of Grain Aeration Systems in Hard Winter Wheat Area."



Labor requirements for operating aeration systems are relatively small. The jobs include: (1) starting or stopping fans, (2) adjusting slide gates or dampers, (3) opening ventilators or windows for air entrance, (4) calibrating and setting automatic controls, (5) maintaining records of fan operation, exhaust air and grain temperatures, and (6) inspecting systems. These jobs take a few minutes a day.



AMS Researcher J. A. Thompson boarded a freighter loaded with beans and sailed with it all the time watching how beans were handled and checking temperature and humidity.

QUALITY BEANS FOR FOREIGN MARKETS

AMS RESEARCH specialists have solved an international marketing mystery. They have discovered what causes top-quality pea beans, in good condition when they leave the U.S., to arrive in foreign markets in moldy condition and with torn bags.

It was natural to suppose that the mold was thriving because of moisture—and that rough handling caused the torn sacks. But the mystery was exactly where and how it happened.

The answer turned out to be excess moisture in the holds and too rough handling when the beans leave the ship.

Once pinpointed, the problem can be easily solved by packing the beans in heavier bags and controlling the moisture on shipboard. But until AMS quality experts found the cause, American pea beans had not been well accepted in Europe. Foreign buyers had contracted and paid for top quality beans. They weren't getting them.

Judson A. Thompson of the Market Quality Research Division of AMS was sent to find out why. He boarded a freighter loaded with 1,600 tons of beans in Detroit and sailed with it through the St. Lawrence and across the Atlantic—all the time watching how the beans were handled and checking their temperature and humidity.

At loading, the beans were definitely in good shape. That meant

something happened to them while aboard ship.

To find out, Thompson installed an elaborate network of wires leading from test points in the load to moisture and temperature recording devices. As the ship crossed the Atlantic, the equipment gathered information.

The first indication of trouble came when the ship steamed from the 40-degree waters of the Labrador Current into the Gulf Stream with its 50° to 55° temperatures. As temperatures increased, water condensed under the deck and dripped on the top layer of the beans in the hold. Moisture-laden air also penetrated the outer layers of beans along the sides of the hold.

The original moisture content of the beans (15 percent by weight) rose to an average of 17 percent. The outer third of the cargo picked up as much as 5 percent additional moisture.

The moist air and lack of ventilation in the hold made a perfect culture for mold. By the time the ship docked in England, mold covered many of the beans and even some of the bags.

Mold also flourished in the poorly ventilated, humid warehouses where the beans were stored up to 6 months or longer.

The damage to the bags, Thompson found, was the result of rough handling upon arrival in Europe.

The bags were not strong enough to withstand the impact of the steel hooks used by European stevedores. By the time the bags reached the buyer—often after several handlings—the beans were spilling out.

No wonder the buyers were dissatisfied. Instead of top-quality beans, they were getting moldy merchandise in torn bags.

What could be done about it?

The first and most obvious thing would be to use heavier bags. AMS researchers say 12-ounce material will offer sufficient protection to the beans and withstand the rough treatment of the steel hooks.

They also recommend fans aboard ship to improve ventilation and control humidity in the hold which, at times, reaches 100 percent. Fans could cut the humidity in half and even reduce the moisture content on the surface beans below its original content.

The quality maintenance experts, however, warn against certain mixed loads. Beans, for example, absorb off-odors when shipped with onions, oil, or coal tar. And they do not travel well with logs that bring in excess moisture.

Research such as this, into the traveling conditions of American exports, may go a long way toward expanding markets for our Nation's agricultural products. A better product gets a better reception—both at home and abroad.

THE CHANGING MARKET



Mechanical splitter throws peanut kernels against a metal wall with enough force to separate halves but not shatter the nuts.

PEANUTS

A new mechanical peanut splitter, together with an inspection belt which turns the halves over and up, now makes the job of the Federal-State peanut inspector easier—and faster.

The device was developed by the Agricultural Marketing Service and the Agricultural Engineering Department of the North Carolina State College of Agriculture and Engineering. Its chief advantage is that it allows the inspector to handle a much larger sample in the same amount of time.

The mechanical splitter throws the peanut kernels against a metal wall with just enough force to separate the halves but not shatter the nuts. Jets of air then shoot upward through a mesh screen and flip the

halves flat-side up. A belt then turns them flat-side down.

This job previously was done by hand.

Although designed primarily as an aid for inspecting and grading peanuts, the new device may be used on picking tables in peanut processing plants or for inspecting other seeds that divide into halves upon impact.

A marketing research report which explains the kernel splitter and inspection belt for peanuts in full detail may be obtained from the Office of Information, U.S. Department of Agriculture, Washington 25, D.C. Ask for MRR-452. There is no charge for single copies.

PLENTIFULS

June Is Dairy Month! And milk and dairy products top the USDA Plentiful Food List.

Also in good supply this month—and also a featured item—are broiler-fryers. Potatoes round out the plentiful list.

POLYETHYLENE

Apple growers can extend the marketing season for Golden Delicious apples by using polyethylene box liners in refrigerated storages.

The poly liners prevent moisture loss and shriveling. This means better apples, longer storage, and—as a result—maximum returns to the packer.

The effectiveness of the box liners was demonstrated by AMS researchers who studied sealed, nonsealed, and perforated liners during seven storage seasons. Liners were used in field boxes and in wood and corru-

gated packing boxes. The study extended from 1953 through 1960. Apples came from orchards in Virginia, West Virginia, Pennsylvania, and Maryland.

Each of the three types of film liners maintained a humidity within the pack high enough to prevent moisture loss and shriveling.

Sealed poly liners work best. But with a complete seal there is some danger of too little gas exchange. Most growers and storage managers probably would prefer a fold-over closure. Not only is it easier, but it offers most of the advantages of a complete seal and fewer hazards.

In the AMS studies, apples packed in boxes lined with polyethylene lost less than 1 percent of their original weight and showed no signs of shriveling after 6 months of storage at 31° to 32° F. Without film liners, fruit loses from 4 to 7 percent in weight and shriveling is often severe.

Packers, however, should take special care in using polyethylene box liners for Golden Delicious apples. For example—

- Specify 1.5-mil gage polyethylene with a density of about 0.914 to 0.925. (Too thick films can suffocate fruit.)

- Use liners only for apples going

Individual wraps at left provide added protection from scald for apples stored 6 months. Box on right has nonsealed liner.



- New Mechanical Peanut Splitter
- Plentiful Foods for June
- Poly Liners for Golden Delicious Apples
- Estimating the Filbert Crop

into storage for 3 months or more.

- Avoid packing overmature apples.

- Avoid packing warm fruit in film liners. Some precooling before packing is desirable.

- Use oiled wraps or chemical scald inhibitors to give added protection against storage scald (if it is a problem).



The filbert project has attracted national and international as well as local interest.

FILBERTS

FILBERT growers in Washington and Oregon now have a better chance of knowing what the year's crop will be long before it is harvested.

A new method of crop prediction, developed and tested by the Oregon office of USDA's Statistical Reporting Service and the Oregon Agricultural Experiment Station is being used in estimating filbert production.

Prior to 1955, forecasts were largely based on growers' opinions. Both growers and handlers felt a need for more reliable information on which to plan their marketings.

Here's how the statisticians developed a system which helped an industry to gauge the size of the filbert

crop more accurately:

- A mail survey was made among all of the commercial growers to get an up-to-date listing of trees.

- Every planting or "block" of trees was identified by location, age, and variety.

- A systematic but random sample of 300 "blocks" was selected.

- Each sample "block" was then visited and a field map drawn to scale, showing the number of tree rows and spaces.

- Individual trees were selected and they, plus two adjacent trees, were sampled. Nut clusters on a 5th of each tree were counted and every 15th cluster picked for additional laboratory analysis. (This analysis provided estimates of nuts per cluster, green and dry weight, and percentage or blanks.)

- The sample trees were then marked so samplers could return to them each year.

This field sampling will start again around mid-July this year when 90 percent of the outer shells of the growing nuts will be completely hard.

A crew of 15 trained samplers will move into the "blocks" to make the counts. By relating the changes in the sample counts and weights to the final production of the previous year, the Crop Reporting Service will obtain a ratio estimate of what the harvest will be.

Funds to finance the development and testing of the new filbert forecasting system came from both private and State sources. These were matched by Federal monies under the provisions of the Agricultural Marketing Act of 1946.

CHEESE

(Continued from page 3)

melts quicker than process cheese.

Pasteurized process cheese spread differs from process cheese food mainly in its higher content of moisture, making it even more spreadable. A stabilizer is also used in its preparation to prevent separation of ingredients.

Cold-pack cheese is a blend of cheeses as in process cheese, but is mixed into a uniform product without heating. Its body is softer than the cheese varieties used in its manufacture and it spreads more easily. Cold-pack cheese food is similar, but contains other dairy and flavor ingredients.

Natural cheeses, process cheeses, and related products, with their practically unlimited uses, add zest and flavor to foods they complement.

The Dairy Division of USDA's Agricultural Marketing Service has recently published "*Cheese Buying Guide for Consumers*," *Marketing Bulletin No. 17*, which provides further detailed information on cheeses and their uses. Copies may be obtained from the Office of Information, USDA, Washington 25, D. C.



Some Tips for Consumers When Selecting FRUITS AND VEGETABLES

Modern-day production and marketing methods have brought to the supermarket a vast array of fresh fruits and vegetables. Often there are so many displays of so many different kinds that the consumer finds it hard to make a selection.

To help today's shopper solve this dilemma, the Agricultural Marketing Service of USDA has issued a pamphlet containing "Tips on Selecting Fruits and Vegetables," MB-13. This booklet tells what to look for and what serious defects to avoid in choosing fresh produce.

* * *

In selecting asparagus, look for plump, tender stalks that are brittle and easily punctured. Avoid asparagus with a large white portion. This part of the spear is generally tough.

* * *

For especially good flavor, a cantaloup must be vine-ripened. The housewife can check by examining the stem scar, which should have no adhering stem. The netting should be coarse and corky and stand out in bold relief. The melon itself should "smell" ripe.

* * *

Pears may be judged best by their appearance. Avoid wilted or shriveled pears and pears with scars, lumps, or green spots. If you are going to use the pears immediately, select fruit that yields easily to pressure near the stem. The flesh should be firm but not hard.

In cut watermelons, look at the color of the flesh. It should be a good red color, firm and succulent. Seeds should be dark brown or black.

* * *

The background color of peaches should be creamy or yellowish in appearance. A "blush" of red or a great deal more overlying red color is usually present, but this alone doesn't necessarily mean good eating. Peaches should be fairly firm but not hard.

* * *

Pick apples with their use in mind. For eating, try Delicious, McIntosh, Stayman, Jonathan, Winesaps. Good pie apples are Yellow Transparent, Gravensteins, Lodis, and Newtons. Rome Beauties, Greenings, and Northern Spies are excellent for baking.

* * *

Look for white "creamy" mushrooms with caps closed and no pitting, discolorations, or wilting. Brown or black "gills" (fluted formation between cap and stem) mean over-age mushrooms.

* * *

Good quality tomatoes are well formed and plump, of a uniform red color, and free from bruises.

* * *

Ears of corn should be well filled with bright, plump, milky kernels which offer only slight resistance to pressure. The husks should be fresh.

Potatoes, like apples, should be selected for their intended use by variety or type. Sound, firm potatoes are best.

* * *

Don't buy produce merely because the price is low. Unless the low price is caused by an oversupply, you may be getting "bargain" quality as well.

* * *

Watch for "faced" commodities. Small fruits and occasionally small vegetables sometimes have the best specimens on top. This "face" layer may conceal ordinary or poor quality in the remainder of the pack.

* * *

Choose foods in plentiful supply. USDA puts out a Plentiful Foods List each month. These foods, because they are abundant, usually are especially good buys.



Growth Through Agricultural Progress